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CLIENT VIRTUALIZATION— THE REALITY BEHIND THE MYTHS

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Executive Brief

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INTRODUCTION

Good computing models are not replaced, they are modernized. This is exactly the case with the client-server computing model. When the client-server computing model originated, several traits that are widespread in today's world of computing did not exist:

- The workplace is no longer just in-building; it is wherever the worker is located; and, with greater frequency, outside the business's guarded structures.
- Additionally, workers demand to use devices of their choice. That choice could be a business-issued laptop; but other times it could be a user-owned laptop, tablet, or smartphone.
- The desktop environment is far from homogenous; the set of applications from one group of users can be significantly different from another group; and personal settings are just that—personal. These traits complicate desktop management.
- The variety of applications runs the gamut of simple request-and-response applications to highly interactive, graphically robust, and real-time applications. Consequently, a single performance standard for all applications is neither suitable nor economical.
- What were once on paper are now digital bits, with some of these bits being highly sensitive. Safeguarding sensitive information in digital form is no longer just a good practice—it is a mandatory practice dictated by governmental and industry regulations.
- Being environmentally conscientious has gone beyond a slogan to a standard business practice. Making wise choices on how computing is conducted can place a business's energy consumption on a new and more favorable trajectory.

Client Virtualization is that modernization of the client-server computing model. But rather than a single approach of terminal access to a limited set of server-hosted applications, there are a variety of approaches under the Client Virtualization umbrella. With this multi-approach umbrella of Client Virtualization, businesses can extend and mold the core virtues of the traditional client-server computing model to accommodate and promote today's computing and business realities.

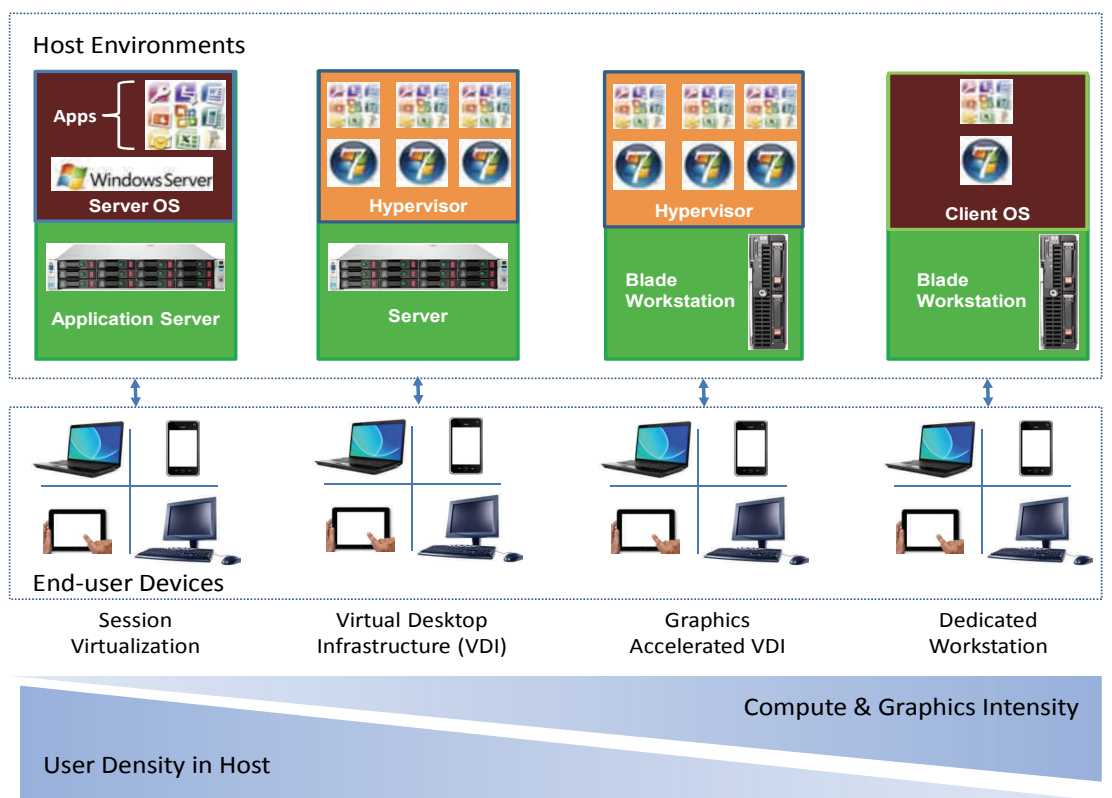
Even so, the suitability of Client Virtualization is clouded in misinterpretations and myths that handicap businesses in making informed and balanced decisions. In this paper, our aim is to assist you in making better decisions about your Client Virtualization deployment by debunking Client Virtualization myths. First, we will set the stage by briefly describing the several approaches of Client Virtualization.

CLIENT VIRTUALIZATION APPROACHES

There are four standard approaches in Client Virtualization, each depicted in the illustration that follows:

- **Session Virtualization** – Also known as terminal access, end users access applications hosted on an application server or within a server farm. Application configurations are typically uniform across end users. Popular in call centers, on-site and remote agents access a collection of job-specific applications through session virtualization.
- **Virtual Desktop Infrastructure (VDI)** – A hypervisor running on the server creates isolated virtual desktops, personalized for each end user or end user groups. Multiple use cases of VDI exist in numerous industries, notably education. For example, in a classroom setting, students are presented with a desktop containing a set of applications tailored for their current class. As they move to the next class, the virtual desktops are reconfigured with the appropriate application(s) for the next class.
- **Graphics Accelerated VDI** – Similar to VDI but with the enhanced computing capabilities of a blade workstation. As appropriately named, this approach is a fit for end users of graphic and other compute-intensive applications, such as computer-aided design (CAD) applications. For example, the virtual desktops of automobile design engineers contain a customized CAD application plus a set of commercial applications (e.g., Microsoft Office). Due to steep processing and RAM demands of a CAD application, the virtual desktops for these end users run within blade workstations.
- **Dedicated Workstation** – In this approach, the blade workstation is dedicated to a single end user; a contrast to Graphics Accelerated VDI which supports multiple simultaneous end users on a single blade. Depending on the end user and the CAD application's requirements, a dedicated workstation may be required. Architects, engineers in health sciences (e.g., pharmaceutical) and aeronautics, weapons designers, geologists, and urban planners are other examples of occupations that are best served with either the Graphics Accelerated VDI or Dedicated Workstation approach.

Client Virtualization Approaches



Source: HP and Stratecast

There are several common attributes with these four approaches, with each attribute contributing to the appeal of Client Virtualization. There are also differences that should be considered in optimizing the mix of Client Virtualization approaches to your end-user requirements, business objectives, and financial priorities.

Common attributes are:

- Centralized Computing** – Whether the end-user’s client environment is an application or a full personalized desktop, the entire computing stack from operating system through applications resides in the business data center—that is, the host environment. Like the traditional client-server model, IT has end-to-end and continuous control over client environments; a level of control which is significantly more complex and challenging to accomplish in a distributed client-based (i.e., localized computing) model. Similarly, the risk of data loss is reduced as user and application data is locked in the host environment, rather than residing on end-user devices.
- Device Independence** – Also common across the Client Virtualization approaches is that end users can access their client environments from any network-connected

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device—desktop, laptop, tablet, or smartphone. Naturally, not all client environments are optimal for each device type. For example, a user experience where magazine-sized screens and hand-sized keyboards are necessary is typically not sought by users of tablets or smartphones. Desktops and laptops are better choices. However, application interactions where tap and swipe are substitutable for click and type are well suited for tablets and smartphones, even if the applications are part of a full desktop environment. Also, by being device independent, remote access and the Bring Your Own Device (BYOD) consumerization trend are inherently supported.

- **Support of Disaster Recovery and Business Continuity (DR/BC)** – With more occupations being deeply dependent on computing, communication, and collaboration, end users are loath to have device breakdowns or disruptions in their compute-dependent work routines. Similarly, businesses can ill afford a reduction in productivity or, worse, a shutdown. With Client Virtualization, disasters affecting availability of data centers, worksites, or even devices are quickly recoverable. The mobility of Client Virtualization allows for client environments to be spun up in a back-up data center. To end-users, the change in the host's physical location of their client environments is transparent. Device independence also supports DR/BC if, for example, a worksite is temporarily inaccessible due to severe weather conditions—end users can go online to access their client environments from their homes. Similarly, without laborious configurations, a replacement or temporary substitute device allows an end user to quickly return to business-as-usual following the loss of a handheld device or a desktop breakdown. Also, data loss risk is not impacted before, during, and after the device transition, as application and user data remained safely locked in the host environment. Moreover, common data center practices in data protection (e.g., automatic data back-up) seamlessly unite with Client Virtualization in support of DR/BC.

The prominent difference among these approaches is the interplay of user density in the host environment, and the compute and graphics intensity required of end-user applications. As shown in the illustration, user density in the host environment is the greatest with session virtualization owing to individual user sessions being limited to the application layer. Moving right to left, more compute resources are allocated to each end user as a separate full stack (OS through applications) desktop session is established for each end user. Continuing to the right, as application compute and graphics requirements intensify, fewer end users are supported per host. Nevertheless, performance equaling client-based computing is possible for these end users; plus the core beneficial attributes of Client Virtualization (i.e., centralized management control, data containment, device independence, remote accessibility, and BR/DC support) remain fully intact.

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A tightly hardware-integrated architecture supporting Client Virtualization—encompassing servers, storage, and networks—is critical in not only supporting performance, but also in maximizing host density and scalability.

Centralization, enabled with Client Virtualization, assists IT in streamlining their desktop management tasks and minimizing individual desktop ‘touches’.

CLIENT VIRTUALIZATION MYTHS

Even with a pedigree rooted in the well understood and practiced client-server computing model, Client Virtualization is not without misperceptions and unsubstantiated myths. In this section, we debunk these misperceptions and myths.

Myth #1: Hardware integration does not matter in Client Virtualization

Like a personal computer, the hardware components (CPU, RAM, and disk storage) work together so the software layers produce a suitable end-user experience. Therefore, hardware does matter.

A tightly hardware-integrated architecture supporting Client Virtualization—encompassing servers, storage, and networks (the input/output between the data center components and end users)—is critical in not only supporting performance, but also in maximizing host density and scalability.

Myth #2: Client virtualization is exclusively about supporting task workers—those accessing a few applications from stationary workstations

This is definitely one use case within Client Virtualization, but it is not the only one. End-user mobility and a desire to access their full desktops, a subset of applications, or just data files with any device and from anywhere is pushing Client Virtualization beyond task workers to include the heaviest of information and high-end graphic workers.

To support a broader range of use cases, your Client Virtualization strategy must be designed to be flexible, preferably from the start.

Myth #3: The cost savings with Client Virtualization are minimal and only material with large scale deployments

This could be the case, but it does not have to be.

Be practical, follow a stepwise process in determining which Client Virtualization approaches are optimal for your situation and then choose a Client Virtualization reference architecture or pre-configured solution that is as close to drop-in-and-go capable as possible, but also flexible to adjust for the future; that is, scalable and supportable of multiple Client Virtualization approaches. A future redesign can add significantly to hardware expenditures, contribute to a heterogeneous infrastructure footprint, and increase IT time in overseeing a platform change or augmentation.

Also, be comprehensive in your financial measurements. For example, do not overlook IT desktop management time. Centralization, enabled with Client Virtualization, assists IT in streamlining their desktop management tasks and minimizing individual desktop ‘touches’.

Myth #4: The primary objective of Client Virtualization is maximizing the number of hosted applications centralized, and/or physical-to-virtual converted desktops

This too could be the case, but it does not have to be.

Client virtualization represents an expansion in a business's alternatives in supporting client computing, streamlining desktop management, protecting sensitive information, and fortifying disaster recovery and business continuity plans. Also, most businesses will have a mix of physical and virtual desktops and a mix of Client Virtualization approaches (e.g., Session Virtualization for select applications, VDI, Graphic Accelerated VDI, and Dedicated Workstation). Therefore, the number of hosted applications and virtual desktops should be tailored to the objectives of your organization.

Because the objectives of Client Virtualization are unique for each business, Client Virtualization assessment and modeling services should be used to determine the types of end users and applications that would be optimized with Client Virtualization. Also, choosing a Client Virtualization platform with broad and flexible support for the four Client Virtualization approaches is advisable.

Myth #5: Management systems are alike; the tools to manage physical desktops will be sufficient in managing Client Virtualizations

This is also not true. Managing Client Virtualization deployments is not the same as managing physical desktops. Performance visibility and troubleshooting must be holistic, from the Client Virtualization platform down to individual end-user devices.

Also, it is important to avoid the headache of multiple management systems. Choose one that is equally effective at managing physical and virtual desktops, storage, and networking. The good news is that management tools exist today that operate across multiple vendor platforms and hypervisors (i.e., mixed environments).

Myth #6: End-user or client devices have little bearing on a successful Client Virtualization strategy

Not true. As there are multiple Client Virtualization approaches, there are different types of end-user devices suitable for each (e.g., zero clients, thin clients, PCs, tablets, and smartphones).

An effective Client Virtualization strategy includes assessment of current and future end-user devices and scenarios in order to maximize visibility and control, optimize end-user experiences, and manage end-to-end costs (e.g., energy consumption, device support, endpoint security) effectively. Also, Client Virtualization directly supports BYOD; a benefit for end users seeking multi-device access for use in their work and personal lives. In addition, BYOD can assist businesses in trimming their physical device inventories (e.g., offering employees a stipend to purchase their own devices for use at work).

Myth #7: Implementing Client Virtualization will take up to a year

This too can be true, but also does not have to be. There are several steps that can be taken to accelerate the implementation of Client Virtualization without elevating operational risks (e.g., over budget, disrupted end-user productivity, and implementation delays).

A top candidate for on-time and on-budget Client Virtualization implementations is

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An effective Client Virtualization strategy includes assessment of current and future end-user devices and scenarios in order to maximize visibility and control, optimize end-user experiences, and manage end-to-end costs effectively.

A top candidate for on-time and on-budget Client Virtualization implementations is avoiding the time consumption and uncertainty of cobbling together hardware, software, and management systems from multiple vendors.

Do your homework—choose a Client Virtualization solution that has demonstrated real-world deployments where expansion in Client Virtualization, both temporary and permanent, were handled as ‘business as usual’.

avoiding the time consumption and uncertainty of cobbling together hardware, software, and management systems from multiple vendors. Instead, choose a proven, integrated Client Virtualization platform from a vendor that also offers professional services—get the right platform implemented the right way.

Myth #8: Because it is virtual, any Client Virtualization environment can easily scale

This is not true, as virtualization is a technology not a solution. If not smartly designed, scalability in Client Virtualization will not be as smooth, end-user transparent, or cost efficient as expected.

Do your homework—choose a Client Virtualization solution that has demonstrated real-world deployments where expansion in Client Virtualization, both temporary and permanent, were handled as ‘business as usual’.

Myth #9: There is no good time to investigate and pursue Client Virtualization

It’s true that the pile of IT responsibilities, and urgency of each, is ceaseless. Nevertheless, delaying examination of Client Virtualization and starting a conversion process places IT organizations behind the ‘eight ball’ when having to address use cases well suited for Client Virtualization; for example, OS migrations, mergers and acquisitions, ‘thou shalt support BYOD’ edicts, and data protection or business continuity strategies in need of overhauling.

Identify the low-hanging fruit and start a pilot today. Investments now will produce benefits in the near and long-term. Do not be caught unprepared.

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The Last Word

There are several angles from which to assess Client Virtualization. Each on its own provides solid rationale to start an investigation into Client Virtualization. Collectively, the evidence strongly supports a conclusion that your organization should, at the very least, launch a serious pilot.

First, Client Virtualization is the modernization of the established client-server computing model. Building on a proven pedigree is always favorable.

Second, Client Virtualization reflects a multi-part convergence of: critical business needs (e.g., improving data loss protection); alleviating the pressure of dynamic work circumstances that strain existing computing models (e.g., remote workers and BYOD); and enabling technologies (e.g., virtualization). Client Virtualization's time has come.

Third, Client Virtualization is not a point solution; it addresses several vexing IT challenges simultaneously. In today's environment, where every IT dollar spent is scrutinized, investing in a solution that has multiple streams of payback is good business.

Last, as we outlined in this paper, the myths surrounding Client Virtualization are just that—myths. Even with those that have a slice of reasonableness, sub-optimal assessments, vendor and platform selections, implementations, or all three have contributed to misperceptions that Client Virtualization is not ready for prime time.

The reality is that Client Virtualization is ready for prime time. To get you into prime time too, we recommend following these steps:

- Do a Client Virtualization assessment and modeling exercise to determine which end users and applications are best suited for Client Virtualization.
- Investigate providers of Client Virtualization that have a history of success. Furthermore, our bias is to choose a provider who builds its Client Virtualization on a tightly integrated (compute, storage, and networking) and flexible (supports multiple Client Virtualization approaches) platform.
- Conduct a pilot. There will most certainly be 'aha' moments and observations that could steer Client Virtualization into areas that were not first considered. Capture all of this data.
- Do not hesitate in your movement from pilot to production. While you want to be pragmatic, you do not want to cede an advantage to your competitors that are leveraging Client Virtualization faster and to a greater extent than you.

The reality is that Client Virtualization is ready for prime time.

Michael Suby

VP of Research
Stratecast | Frost & Sullivan
msuby@stratecast.com

Silicon Valley

331 E. Evelyn Ave., Suite 100
Mountain View, CA 94041
Tel 650.475.4500
Fax 650.475.1570

San Antonio

7550 West Interstate 10, Suite 400
San Antonio, Texas 78229-5616
Tel 210.348.1000
Fax 210.348.1003

London

4, Grosvenor Gardens,
London SW1W 0DH, UK
Tel 44(0)20 7730 3438
Fax 44(0)20 7730 3343

877.GoFrost • myfrost@frost.com
<http://www.frost.com>

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